

SEVERE LOCAL STORMS, APRIL, 1929—Continued

Place	Date	Time	Width of path, yards	Loss of life	Value of property destroyed	Character of storm	Remarks	Authority
Norristown, Ga.	25		200	2	50,000	Tornado and hail	Houses and crops suffered.	Official, U. S. Weather Bureau.
Georgia (south-central part)	25				100,000	Heavy hail	Fruit and other crops greatly damaged. Houston and Tift Counties hard hit.	Do.
Churubusco, Ind.	25				10,000	Possibly tornado	Garage destroyed; windows, poles, and fruit trees suffered.	Do.
Ohio (northeastern)	25					Heavy hail	Greenhouses, roofing, and auto tops damaged. Northern part of Wayne County hardest hit.	Do.
Akron to Ravenna, Ohio	25			3		Wind and electrical	Roofs ripped off; outbuildings destroyed; trees flattened.	Standard Union (New York, N. Y.).
Moundsville, W. Va., and vicinity	25				15,000	Hail and wind	Factory partly unroofed; glass broken.	Official, U. S. Weather Bureau.
Louisa County, Iowa	27	7 p. m.	220		2,100	Tornado	No personal injuries reported.	Do.
Kershaw County, S. C.	28	2:30 p. m.	100	1	5,000	do.	Injuries to 12 persons.	Do.
Cleveland, Ohio, and vicinity	28	4-5 p. m.		1		Thundersquall and hail	Windows blown in; boy drowned from upset sailboat. Marked wind damage at Parma Village, in tract 200 yards long and 75 yards wide.	Do.
Tom Green and Runnels Counties, Tex.	29	Noon	880		5,000	Hail and wind	Crops and livestock suffered; windmills blown down; houses unroofed.	Do.
Mercury, Tex.	29	3 p. m.	6 mi.		30,000	Hail	Crops, buildings, and autos damaged.	News (Dallas, Tex.).
Richards, Tex.	29	5 p. m.	6 mi.		50,000	Wind	Losses mainly in crops and buildings. 3 persons hurt.	Official, U. S. Weather Bureau.
Bell County, Tex.	29	5-5:30 p. m.	1-3 mi.		1,500	Wind and hail	Crops and buildings suffered.	Do.
Doniphan County, Kans.	30	1 a. m.			1,000	Wind	Outbuildings destroyed; windows broken; wire lines down.	Do.
Mahaska and Keokuk Counties, Iowa	30	6 a. m.			12,000	do.	1 person hurt.	Do.
Linn County, Iowa	30	7:30 a. m.			3,000	do.	No details.	Do.
Ionia County, Mich.	30	4 p. m.				Electrical and tornadoic wind.	Buildings razed; considerable damage from lightning.	Do.
Winnebiek County, Iowa	30	5 p. m.			4,000	Tornado	No details.	Do.
Trempealeau, Wis.	30	5:15 p. m.				Heavy hail	Apple buds and early vegetables suffered.	Do.
Alabama (central and northeastern).	30				10,000	Hail	Garden truck injured; young cotton ruined locally.	Do.

627.41 (73) RIVERS AND FLOODS

By H. C. FRANKENFIELD

The outstanding feature of the month of April was the great Mississippi flood. As shown in previous reports, the Mississippi River at the close of March, 1929, was in flood from Muscatine, Iowa, to Baton Rouge, La., and during the month of April the river continued above the flood stage from the mouth of the Ohio River southward, a primary crest of 18.4 feet passing Orleans, La., on April 29. However, the decline from the primary crest was slight, and after a few days another rise to still greater heights set in, and at the end of May it was still in progress below the mouth of the Arkansas River. Discussion of this lower Mississippi flood will therefore be postponed, as probably it will be about the middle of June when the crest of the flood passes into the Gulf of Mexico.

Mississippi River above the mouth of the Ohio.—The river did not reach the flood stage above Muscatine, Iowa, although it was quite high during late March and in April as far north as the mouth of the Wisconsin River. Comparatively little of the abnormally heavy winter snowfall over Wisconsin, Minnesota, and Iowa had melted by the end of February, but above normal temperatures during the first week of March started snow melting, although not in large quantity during the first week, and soon the main river and all tributary streams began to rise. While rains were neither frequent nor heavy, comparatively high temperatures continued, and by the middle of the third week of March little snow remained, and tributary streams generally were in flood, especially those of the State of Iowa, two of which, the Cedar and Nishnabotna Rivers, rose to the highest stages of record. During the early days of the flood the situation was further complicated by the occurrence of ice gorges, mainly over the southern portion of the State, that caused local overflows which were very destructive to bridges, highways, and farm property. For an excellent résumé of the conditions in the State of Iowa the reader is

referred to the Monthly Climatological Summary of that State for the month of March.

The lower Wisconsin River flood was an April flood, beginning with the 7th at Merrill, and ending with the 13th at Portage, Wis. Warnings were issued at the proper time and there was no damage of consequence. Similar conditions prevailed during the first week of April in the lower Rock River of Illinois.

The upper Mississippi River was in flood from Muscatine, Iowa, to the mouth of the Ohio River, especially above St. Louis, Mo., the region of maximum intensity extending from the mouth of the Des Moines to the mouth of the Missouri River. At Muscatine the river was above the flood stage from March 19 to April 7, and again from April 13 to 25; at Keokuk, Iowa, continuously for 49 days from March 16 to May 3; at Warsaw, Ill., for 48 days from March 16 to May 2; at Quincy, Ill., for 55 days from March 14 to May 8; and at Hannibal and Louisiana, Mo., for 58 days from March 14 to May 11. From Keokuk to Louisiana the crest stages were but little below the highest recorded stages, and the flood was the greatest since June, 1903.

Reported loss and damage amounted to \$1,185,500, divided as follows: Tangible property, \$109,000; matured crops, \$25,000; prospective crops (38,000 acres), \$784,000; livestock, etc., \$1,000; suspension of business, \$266,000. Reported money value of property saved through flood warnings, \$125,000.

On March 21 a crevasse occurred in the Indian Grave Levee, just north of Quincy, Ill., and 17,000 acres of land, much of it under cultivation, were overflowed. At about the same time a breach occurred in a small protecting levee at Canton, Mo., and a considerable portion of the lower section of the town was flooded. On April 21 the Marion County, Mo., levee along Fabius River broke, and 4,000 acres of land were overflowed. This levee also broke in November, 1928. On April 21 there was a further breach at Canton, Mo., and again the lower section of the town was inundated. The final crevasse was

that of April 24 in the South Quincy, Ill., Drainage District, and some 6,000 acres of rich agricultural lands, known as "Quincy Gardens," were flooded.

Not much farm work can be done during the month of May. Low places are full of water, there is much seep water, wheat plants are turning yellow at the base, and in the famous Sny Levee district not much more than a half crop is anticipated.

Warnings for all floods were timely and very accurate, and there were no preventable losses reported.

In the St. Louis section of the Mississippi River from below Louisiana, Mo., to above Cape Girardeau, Mo., the river was generally in flood a large part of the month, and during the entire month at Grafton and Alton, Ill.

Damage to wheat was great, and as two floods followed in May, there is much apprehension as to the possibility of being able to plant corn in time to enable it to reach maturity.

A general rise began in the Illinois River during the last week of February, and by March 1 all of the alluvial river, except the extreme lower reach, was in flood, and at the end of April the river was still in flood.

There were also floods in the Missouri River and tributaries east of Kansas City, but nothing of special consequence developed along the main stream. The Grand River was rather high during the first half of March and the last decade of April. There was also a flood in the Osage River, and it will be treated later in connection with a more decided May flood.

Warnings for these floods were of the usual accurate character, and received high commendation, as did others, from the press and others interested.

Reported loss and damage for March were as follows: Tangible property, \$90,000; matured crops, \$1,000; prospective crops, 15,000 acres, \$150,000; total, \$241,000. Reported value of property saved through flood warnings, \$53,000.

Ohio Basin.—The Ohio River was not in flood during April above Dam No. 50, Fords Ferry, Ky., 104 miles above the mouth of the river, and at Cairo the crest stage was 51.5 feet, 6.5 feet above the flood stage, on April 5 and 6. The river fell below the flood stage on April 21, but after reaching 42.4 feet on April 25, it again began to rise under the influence of the upper Mississippi flood, and on the last day of the month the stage was 45.5 feet. Reports of loss and damage must be deferred until after the subsidence of the greater flood of May.

A series of moderate to heavy rains, beginning with April 7 caused quite general although not very damaging floods over the greater portion of the Wabash-White system of Indiana. Warnings were issued as required, and the reported damage amounted to only \$21,000, \$4,100 in tangible property, \$7,700 in prospective crops, and \$9,200 on account of suspension of business. The reported value of property saved through the warnings was \$12,500.

Atlantic drainage.—New England rains were quite abundant during April, with also some melting of snow, and there were several marked rises in the rivers, with some damage along smaller streams, caused largely by the breaking of a few small dams. There were no flood stages reached in the Connecticut River except at Hartford, Conn., where the river was above the flood stage of 16 feet from April 22 to 24, inclusive, with a crest of 17.9 feet on April 23. Warnings were issued, and there was very little damage, although lowlands in Massachusetts and Connecticut were under water for some time. Moderate floods in the Hudson River between Troy

and Castleton, N. Y., were also without incidents of interest.

In the basin of the North Branch of the Susquehanna River conditions were somewhat more marked and there were general floods with crest stages from 2 to 6.5 feet above the flood stages, the greatest excess occurring in the State of Pennsylvania. Damage was comparatively small, about \$45,000 in all, not including damage caused by overflow of small streams.

There was a moderate flood in the Potomac River between April 16 and 18. The flood stage of 8 feet at Cumberland, Md., was exceeded by 1 foot on April 16, and at Harpers Ferry, W. Va., there was a crest of 21.3 feet, 3.3 feet above the flood stage, on April 17. At Washington, D. C., the crest stage of 8.1 feet on April 18 was 0.1 foot above the flood stage.

There was some overflow from the mouth of the Great Cacapon River to Harpers Ferry, resulting in considerable inconvenience and some interruption of traffic, but the actual losses were small.

Local floods in Virginia and the two Carolinas were not of importance. They were well forecast and damage was inconsequential.

Great Lakes drainage.—On April 1 a considerable quantity of rain and snow fell over lower Michigan, followed during the succeeding four days by heavy rains and high temperatures. Soon all rivers were rising rapidly, and over the drainage area of the Saginaw River there were quite important floods from April 6 to 10, inclusive.

The Saginaw River and its four important tributaries, the Tittabawassee, Chippewa, Cass, and Flint Rivers were in flood, and at Saginaw the Saginaw River on April 9 and 10 reached a stage of 21.4 feet, 2.4 feet above the flood stage.

Much damage was done in the city of Midland on the Tittabawassee River, and at Vassar on the Cass River. Lowlands and basements were flooded, roads washed out and thousands of acres of planted farm land overflowed. Not much damage was done in the city of Saginaw.

Total loss and damage as reported, amounted to \$171,000, of which \$100,000 was in tangible property, \$36,000 in prospective crops, and \$35,000 in suspension of business. The reported value of property saved at Midland and Vassar through the warnings was \$46,000.

Miscellaneous.—The Arkansas River was generally in moderate flood from Webbers Falls, Okla., to Morrilton, Ark., between April 22 and 27, and there were two other less important rises earlier in the month.

Some crops in bottom lands were destroyed and planting was delayed, but on the whole losses were small. Similar conditions prevailed in the White River basin of Arkansas.

The rivers of eastern Kansas were in moderate flood on April 20 and 21, and a day or two later the floods extended throughout the Neosho River in Oklahoma.

Damage in the State of Kansas, as reported, amounted to \$326,600, divided as follows: Tangible property, \$93,600; matured crops, \$10,000; prospective crops, \$145,000; livestock and other movable property, \$30,000; and suspension of business, \$48,000. As frequently happens the major portion of the damage was caused by overflows of small streams, and growing crops suffered most. Savings reported as a result of the warnings amounted to \$105,000.

The Neosho and Arkansas River floods in the State of Oklahoma were three in number, each caused by a

single heavy rain of 24 hours' duration or less. The third flood, between April 20 and 26, with crests from 4 to 6 feet above flood stage was the only important one. However, owing to the operation of 15 sand and gravel companies in these districts, forecasts and warnings were equally necessary for the two previous rises. The value of the individual equipment of these companies ranges between \$250,000 and \$500,000, and failure to receive notice of decided rises means damage and loss to the equipment.

There was very little loss of livestock and other movable property during the flood, but 25,000 acres of land were overflowed causing a loss of \$150,000 in prospective crops. Tangible property losses were \$30,000, and those due to suspension of business, \$7,500, a total of \$187,500. Value of property saved through warnings, \$30,000 plus the speculative amounts saved by the sand and gravel companies.

The floods in the Yazoo River will be covered in the report on the Lower Mississippi floods when published.

A few local floods in the Southwest were of minor character.

[All dates in April unless otherwise specified]

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
ATLANTIC DRAINAGE					
Connecticut: Hartford, Conn.	16	22 27	24 (1)	17.9	23.
Hudson:					
Troy, N. Y.	15	22	22	17.2	22.
Albany, N. Y.	12	22	22	12.8	22.
Hoosic: Hoosick Falls, N. Y.	4	26	26	4.0	26.
Susquehanna:					
Oneonta, N. Y.	12	13	14	13.0	13.
Bainbridge, N. Y.	11	17 21	17 24	15.7 14.9	22. 22.
Binghamton, N. Y.	14	22	23	12.0	17.
Towanda, Pa.	16	22	23	14.9	22.
Wilkes-Barre, Pa.	20	21	24	15.9	22.
Chenango: Sherburne, N. Y.	8	21	23	19.9	22.
Chemung: Corning, N. Y.	16	21	21	26.5	22.
Potomac:					
Cumberland, Md.	8	16	16	9.3	21.
Harpers Ferry, W. Va.	18	17	18	16.4	21.
Washington, D. C.	8	18	18		
James:					
Columbia, Va.	18	17	18	9.0	16.
Richmond, Va.	10	17	18	21.3	17.
Roanoke:					
Randolph, Va.	21	17	17	8.1	18.
Weldon, N. C.	30	18	20	22.4	17.
Neuse: Smithfield, N. C.	14	19	19	11.4	18.
Cape Fear: Elizabethtown, N. C.	22	18	19	21.3	17.
Peedee: Mars Bluff, S. C.	17	(2) 19	6 21	37.2	18.
Santee:					
Rimini, S. C.	12	(2) 14	10 (1)	14.5	19.
Ferguson, S. C.	12	(2)	(1)	23.0	18.
Saluda:					
Pelzer, S. C.	7	29	29	25.4	Mar. 5.
Chappells, S. C.	14	30	(1)	17.8	20.
Altamaha:					
Charlotte, Ga.	15	(2)	7	25.3	Mar. 9.
Everett City, Ga.	10	(2)	11	17.5	Mar. 10.
Ocmulgee: Abbeville, Ga.	11	(2)	2	7.2	29.
EAST GULF DRAINAGE					
Apalachicola: Blountstown, Fla.	20	(2)	3	26.7	Mar. 6.
Alabama: Selma, Ala.	35	(2)	1	16.0	Mar. 15-16.
Tombigbee: Lock 4, Demopolis, Ala.	39	(2)	9	19.6	Mar. 10.
Pearl:					
Jackson, Miss.	20	(2) 28	7 (1)	32.2	Mar. 24, 25, 28, 29.
Monticello, Miss.	18	(2)	6	20.6	Apr. 29-30.
Columbia, Miss.	18	(2)	9	21.9	Mar. 28-31.
West Pearl: Pearl River, La.	13	(2)	16	15.4	6-8.
GREAT LAKES DRAINAGE					
St. Joseph: Montpelier, Ohio.	10	2 22	2 24	10.6	2.
Saginaw: Saginaw, Mich.	19	6	15	13.8	22.
Flint: Flint, Mich.	11	7	9	22.4	9-10.
				12.3	8.

1 Continued at end of month.

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
GREAT LAKES DRAINAGE—cont.					
Tittabawassee:	Feet			Feet	
Midland, Mich.	18	6	10	21.4	8.
Shields, Mich.	16	6	11	18.4	9.
Chippewa: Mount Pleasant, Mich.	12	8	9	12.6	9.
Cass: Vassar, Mich.	14	2	2	14.7	2.
Grand:		5	9	18.5	6.
Eaton Rapids, Mich.	5	1	10	5.5	3.
		21	30	5.2	23.
Grand Ledge, Mich.	7	1	5	7.0	1-5.
		22	23	7.0	22-23.
Red Cedar: East Lansing, Mich.	8	22	22	8.0	22.
MISSISSIPPI DRAINAGE					
Ohio:					
Dam No. 50, Fords Ferry, Ky.	35	1	2	35.4	1.
Paducah, Ky.	43	1	6	43.8	3.
Dam No. 52, Brookport, Ill.	43	1	6	44.0	3.
Dam No. 53, Grand Chain, Ill.	43	(2)	11	48.7	Mar. 19-20.
		15	17	43.1	16-17.
Cairo, Ill.	45	(2)	21	51.9	Mar. 20.
		29	(1)		
Shenango: Sharon, Pa.	9	5	7	11.9	5.
Beaver: Beaver Falls, Pa.	11	5	6	12.3	5.
Scioto:					
Larue, Ohio.	11	11	11	11.0	11.
Circleville, Ohio.	10	11	11	11.0	11.
Walhonding: Walhonding, Ohio.	8	22	22	8.8	22.
Wabash:					
Lafayette, Ind.	13	2	4	16.7	3.
		12	12	13.2	12.
Covington, Ind.	16	2	5	19.8	4.
		12	14	17.3	13.
Terre Haute, Ind.	16	11	11	16.1	11.
Vincennes, Ind.	14	11	18	16.3	15.
Mount Carmel, Ill.	16	11	20	21.0	17.
White: Decker, Ind.	18	15	18	19.6	17.
White, East Fork: Seymour, Ind.	10	12	12	10.5	12.
White, West Fork:					
Elliston, Ind.	19	11	14	22.4	13.
Edwardsport, Ind.	15	11	16	18.1	14.
Cumberland:					
Carthage, Tenn.	40	(2)	1	55.6	Mar. 25.
Nashville, Tenn.	40	(2)	4	50.9	Mar. 30-31.
Clarksville, Tenn.	46	(2)	6	54.4	1.
Lock F, Eddyville, Ky.	57	(2)	8	62.5	4.
Tennessee:					
Florence, Ala.	18	(2)	1	22.8	Mar. 25.
Riverton, Ala.	33	(2)	3	44.6	Mar. 25-26.
Savannah, Tenn.	40	(2)	4	44.5	Mar. 27.
Johnsonville, Tenn.	31	(2)	6	36.8	Mar. 29.
Mississippi:					
Muscatine, Iowa.	16	(2)	7	16.7	Mar. 23.
		13	25	17.0	Apr. 21.
Keokuk, Iowa.	14	(2)	May 3	19.4	Mar. 23.
Warsaw, Ill.	17	(2)	May 2	22.0	Mar. 23.
Quincy, Ill.	14	(2)	May 8	21.4	23, 27.
Hannibal, Mo.	13	(2)	May 11	22.1	27.
Louisiana, Mo.	12	(2)	May 11	21.1	27.
Grafton, Ill.	18	(2)	(1)	26.2	28.
Alton, Ill.	21	(2)	(1)	30.1	28.
St. Louis, Mo.	30	12	13	30.5	12.
		24	(1)	34.6	27-28.
		4	18	30.0	13.
Chester, Ill.	27	24	(1)	33.3	28.
Cape Girardeau, Mo.	30	(2)	(1)	36.9	29, 30.
New Madrid, Mo.	34	(2)	(1)	41.0	Mar. 21.
Memphis, Tenn.	35	(2)	(1)	41.1	11.
Helena, Ark.	44	(2)	(1)	41.2	13.
Arkansas City, Ark.	48	(2)	(1)	55.5	17-22.
Greenville, Miss.	42	(2)	(1)	49.3	21-23.
Vicksburg, Miss.	45	(2)	(1)	52.7	25, 26, 29, 30.
Natchez, Miss.	46	(2)	(1)	52.1	27-30.
Angola, La.	45	(2)	(1)		
Baton Rouge, La.	35	(2)	(1)		
Donaldsonville, La.	28	2	(1)		
New Orleans, La.	17	8	(1)		
Wisconsin:					
Merrill, Wis.	11	7	8	11.6	7.
Knowlton, Wis.	12	6	10	16.0	8.
Portage, Wis.	17	11	13	17.9	12.
		(2)	7	13.4	Mar. 20.
Rock: Moline Bridge, Ill.	11	22	29	11.9	25.
Des Moines: Ottumwa, Iowa.	10	26	26	10.0	26.
Salt: New London, Mo.	20	26	26	21.5	26.
Illinois:					
Morris, Ill.	13	1	4	15.3	2.
		11	13	14.6	12.
Peru, Ill.	14	(2)	(1)	21.2	Mar. 18-19.
				20.3	Apr. 2, 3.
Henry, Ill.	10	(2)	(1)	16.0	Mar. 20-21.
				15.4	Apr. 4.
Peoria, Ill.	18	(2)	(1)	22.5	Mar. 20-22.
				21.8	Apr. 5, 6, 9.
Havana, Ill.	14	(2)	(1)	19.6	6.
Beardstown, Ill.	14	(2)	(1)	21.2	6.
				19.7	6-7.
Pearl, Ill.	12	(2)	(1)	21.3	29-30.

2 Continued from last month.

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
MISSISSIPPI DRAINAGE—continued					
Meramec:	<i>Feet</i>			<i>Feet</i>	
Pacific, Mo.....	11	9	12	15.1	12.
Valley Park, Mo.....	14	10	12	18.0	12.
Missouri:					
Waverly, Mo.....	23	22	23	24.0	23.
Boonville, Mo.....	21	24	26	22.8	25.
Hermann, Mo.....	21	24	27	22.8	26.
St. Charles, Mo.....	25	11	14	26.6	11.
		23	29	30.5	26.
Kansas: Topeka, Kans.....	21	20	20	21.8	20.
Solomon: Beloit, Kans.....	18	20	21	22.2	21.
Grand:					
Gallatin, Mo.....	20	20	23	33.5	21.
Chillicothe, Mo.....	18	20	27	30.2	22.
Brunswick, Mo.....	12	22	28	18.5	24.
Grand, Thompsons Fork: Trenton, Mo.....	20	20	20	21.4	20.
Osage:					
Osceola, Mo.....	20	9	12	23.5	11.
		21	30	22.0	22.
Warsaw, Mo.....	22	9	13	26.0	10.
Tuscumbia, Mo.....	25	10	14	28.5	12.
Arkansas:					
Webbers Falls, Okla.....	23	16	16	23.8	16.
		22	25	26.1	23.
Fort Smith, Ark.....	22	17	17	22.7	17.
		22	26	25.2	24.
Dardanelle, Ark.....	20	18	18	20.6	18.
Morrilton, Ark.....	20	24	27	23.0	25.
Yaucopin, Ark.....	29	(²) 24	(¹) 27	41.4	20-22.
Neosho:					
Oswego, Kans.....	17	20	23	23.0	21.
		26	26	19.1	26.
Wyandotte, Okla.....	23	21	22	26.8	22.
Pensacola, Okla.....	24	19	25	25.2	19.
Fort Gibson, Okla.....	22	10	10	22.3	10.
		15	16	23.0	16.
		21	26	28.3	23.
Verdigris:					
Independence, Kans.....	30	20	23	41.9	21.
		25	25	34.3	25.
Sageeyah, Okla.....	35	22	28	40.4	26.
Petit Jean: Danville, Ark.....	20	9	11	21.1	10.
White:					
Calico Rock, Ark.....	18	9	12	22.1	10.
Batesville, Ark.....	23	9	13	28.8	11.
Newport, Ark.....	26	11	25	29.3	13.
Georgetown, Ark.....	22	13	(¹)	25.8	22.
DeValls Bluff, Ark.....	24	16	(¹)	26.2	22, 23, 25, 26.
Clarendon, Ark.....	30	20	(¹)	30.7	25-27.
Black:					
Williamsville, Mo.....	11	10	10	11.6	10.
Poplar Bluff, Mo.....	14	10	12	15.9	11.
		17	17	14.9	17.
Corning, Ark.....	11	4	(¹)	13.7	16, 17.
Black Rock, Ark.....	14	5	(¹)	22.7	11.
Cache: Patterson, Ark.....	9	14	25	9.5	16, 17.
Yazoo: Yazoo City, Miss.....	25	(²)	(¹)	29.6	26-29.
Tallahatchie: Swan Lake, Miss.....	25	(²)	(¹)	31.7	Mar. 29-Apr. 1.
Atahafalaya:					
Simmesport, La.....	41	13	(¹)		
Melville, La.....	37	Mar. 28	(¹)		
WEST GULF DRAINAGE					
Trinty: Dallas, Tex.....	25	21	21	25.9	21.
Brazos: Freeport, Tex.....	4	13	13	4.1	13.
Guadalupe: Victoria, Tex.....	16	10	13	22.8	13.
Rio Grande: San Marcial, N. Mex.....	3	8	8	3.0	8.
PACIFIC DRAINAGE					
Colorado: Parker, Ariz.....	7	8	16	8.1	11.
		22	(¹)	8.6	27.
Salt: Phoenix, Ariz.....	5	5	6	6.7	5.

¹ Continued at end of month.² Continued from last month.

THE EFFECT OF WEATHER ON CROPS AND FARMING OPERATIONS, APRIL, 1929

By J. B. KINCER

General summary.—During the first decade vegetation of all kinds made exceptional progress, with abnormally warm weather and mostly ample soil moisture in Central and Eastern States. Fruits advanced unfavorably, with early varieties in bloom as far north as northern Indiana and southern Iowa, or two or three weeks earlier than the average. Field work made good progress in most areas,

but rain or wet soil caused further interruption in some interior sections, although spring planting advanced better than during the previous month. Local storms and tornadoes did some damage in Central-Northern States.

During the second decade rather frequent rains and wet soil in the interior caused further delay to spring work, with the progress in preparations two to three weeks late in sections; some plowing and seeding were accomplished locally. The unfavorable advance of fruit trees resulted in considerable harm in many places as heavy to killing frosts occurred during the period; much local injury was reported in the Appalachian region, but elsewhere only light harm resulted. In the South the weather permitted active field operations, and the previous rains greatly benefited the crops of Florida, but parts of Texas and New Mexico were still dry. Cold rain or snow was detrimental to livestock in some western sections, especially to young lambs; rain was needed in parts of the Pacific Northwest.

During the last decade frequent rainfall and continued wet soil caused further delay to spring work in many important agricultural sections, and dry, warm weather was needed generally from the central and northern Atlantic area westward to the Great Plains. Field work was delayed also in the southeast and north-central Cotton Belt, but seasonal preparations made satisfactory advance elsewhere in the South; rain was still needed in the Southwest, especially in western Texas and Oklahoma. Conditions were largely favorable in the Great Plains, especially in the North where spring work advanced rapidly.

Small grains.—Winter wheat made very good advance during the first decade in the central and eastern portions of the belt, except for some reports of wet soil. There was some soil blowing in parts of Kansas and Nebraska, but the crop did well in most of the Plains States; the Pacific Northwest still needed rain, but rapid growth was made elsewhere. Conditions were rather unfavorable for best growth of winter wheat in the Ohio Valley during the second decade, with some yellowing, and growth varied widely in the trans-Mississippi States, ranging from poor to excellent. Growth was very good in the Great Plains with the plants jointing in eastern Kansas. Marked improvement was made in Washington and some advance in Oregon; favorable conditions prevailed elsewhere, except for the dry portions of Texas. During the last decade growth of winter wheat varied greatly in the eastern belt, but condition remained mostly unchanged, except for some additional reports of yellowing in the interior valleys. The crop did well in the Great Plains, with much jointing in southern and eastern Kansas, but rain was still badly needed in parts of the Southwest.

Seeding spring wheat made good advance in most sections of the belt, except for some delay by wet soil in North Dakota, but toward the close of the month drying winds permitted resumption of work in the previously wet areas. Much wheat was still unsown in South Dakota at the close, but the early crop was coming up nicely to good stands and color. Oat seeding was well along during the first decade, but the weather during the latter part of the month was unfavorable for this work and at the close some rather widespread areas were still to be seeded; the winter crop did well generally.

Corn.—Preparations for corn planting were rather active during the first decade in much of the interior and eastern sections, but the soil continued too wet in considerable portions of the upper Mississippi Valley, es-